

Claims

- [c1] A method usable with a subterranean well, comprising:
communicating a wireless stimulus from a surface of the well; and
actuating a casing conveyed tool in response to the communication.
- [c2] The method of claim 1, wherein the actuating comprises communicating with a perforating gun.
- [c3] The method of claim 1, wherein the actuating comprises firing a perforating gun.
- [c4] The method of claim 1, further comprising:
communicating uphole another wireless stimulus from the tool.
- [c5] The method of claim 4, further comprising:
communicating said another wireless stimulus to the surface of the well.
- [c6] The method of claim 4, wherein the tool comprises a perforating gun and said communicating another wireless signal comprises communicating a signal to confirm firing of the perforating gun.

- [c7] The method of claim 1, wherein the communicating comprises:
transmitting an electromagnetic wave from the surface of the well through earth.
- [c8] The method of claim 1, wherein the communicating comprises:
communicating a seismic wave from the surface of the well through earth.
- [c9] The method of claim 1, wherein the communicating comprises:
communicating an acoustic wave downhole.
- [c10] The method of claim 9, further comprising:
communicating the acoustic wave on at least one of a production tubing and a casing string.
- [c11] The method of claim 1, wherein the communicating comprises:
communicating a pressure pulse downhole.
- [c12] The method of claim 11, further comprising:
communicating the pressure pulse through at least one of a fluid in a production tubing, a fluid in a casing string, and a fluid in an annulus.
- [c13] The method of claim 1, further comprising:

encoding the stimulus to indicate a command; and
decoding the stimulus near the tool to extract the com-
mand.

- [c14] A system usable with a subterranean well, comprising:
a casing conveyed tool located downhole in the well; and
an apparatus to communicate a wireless stimulus from a
surface of the well to the tool to actuate the tool.
- [c15] The system of claim 14, wherein the tool comprises a
perforating gun.
- [c16] The system of claim 15, further comprising:
a firing system to fire the perforating gun in response to
the wireless stimulus.
- [c17] The system of claim 14, further comprising:
another apparatus to communicate a wireless stimulus
from the tool uphole.
- [c18] The system of claim 17, wherein said another apparatus
is adapted to communicate said another wireless stimu-
lus to the surface of the well.
- [c19] The system of claim 17, wherein the tool comprises a
perforating gun and said another circuit is adapted to
communicate a wireless stimulus to confirm firing of the
perforating gun.

- [c20] The system of claim 14, wherein the apparatus is adapted to transmit an electromagnetic wave from the surface to the tool through earth.
- [c21] The system of claim 14, wherein the apparatus is adapted to communicate a seismic wave from the surface through earth.
- [c22] The system of claim 14, wherein the apparatus is adapted to communicate an acoustic wave downhole to actuate the tool.
- [c23] The system of claim 22, wherein said apparatus is further adapted to communicate the acoustic wave using at least one of a production tubing and a casing string.
- [c24] The system of claim 14, where the apparatus is adapted to communicate a pressure pulse downhole to actuate the tool.
- [c25] The system of claim 24, wherein the apparatus is further adapted to communicate the pressure pulse through at least one of a fluid in a production tubing, a fluid in a casing string, and a fluid in an annulus.
- [c26] The system of claim 14, wherein the apparatus is further adapted to:
encode the stimulus to indicate a command, and

decode the stimulus near the tool to extract the command.

- [c27] A tool comprising:
 - a first mechanism adapted to be embedded in a casing string section to perform a downhole function; and
 - a second mechanism adapted to respond to a wireless stimulus transmitted from a surface of the well to actuate the first mechanism to cause the first mechanism to perform the downhole function.
- [c28] The tool of claim 27, wherein the downhole function comprises at least one of firing a perforating gun and operating a valve.
- [c29] The tool of claim 27, wherein the stimulus comprises at least one of the following:
 - an acoustic wave, an electromagnetic wave, a seismic wave and a fluid pressure pulse.
- [c30] The tool of claim 27, wherein the second mechanism is integrated into the casing string section.
- [c31] The tool of claim 27, further comprising:
 - a third mechanism to transmit another wireless stimulus uphole to confirm the first mechanism performed the downhole function.